

SAN JACINTO WASTE PITS

EPA DIVER CAP ASSESSMENT AND SAMPLING ACTIVITIES 9/17

BACKGROUND

The San Jacinto River Waste Pit Site history has been presented in several documents approved by EPA. In brief, paper mill wastes were disposed in impoundments about 14 acres in size at the site in the 1960's, resulting in dioxin and furan contamination in the adjacent waterbody of the San Jacinto River. The impoundments/waste pits are situated on a 20-acre parcel immediately north of Interstate Highway 10 on the west bank of the San Jacinto River.

Pursuant to an EPA-issued Order on Consent (AOC), International Paper Company (IPC) and McGinnes Industrial Maintenance Corporation (MIMC) undertook a Time Critical Removal Action (TCRA). As a central component of that action, IPC and MIMC implemented action to stabilize the waste pits and to install the TCRA Cap. The original 1966 boundaries of the northern impoundments/waste pits and impacted area extend into the current basin of the San Jacinto River, with a portion of the cap underwater in depths extending to a maximum of approximately 16 feet. The TCRA Cap is designed to prevent the migration of dioxins and furans from the historic boundaries of the northern impoundment into the San Jacinto River and its sediments. TCRA Cap installation was completed in July 2011.

INTRODUCTION

In December 2015 and April 2016, the EPA Region 6 Dive Team, assisted by the Environmental Response Team (ERT), conducted Scientific diving operations to assess the condition of the underwater cap in detail and determine whether there exist cap deficient areas which may require repair. Prior to diving events, PRP probing methods from a boat were used conducted every 30 feet to assess cap integrity. The cap deficient areas or Areas of Interest (AOIs), were identified by PRP probing and/or EPA divers, most of which were located in the Northwest area of the underwater cap. The cap deficient areas, which may expose waste pit materials to the river environment, were identified and documented in EPA Dive Team reports. Subsequently the PRP conducted further confirmatory probing and made repairs to the cap, as needed.

PURPOSE

Recently Hurricane Harvey dumped 20-50 inches of rain in the Houston area, causing widespread flooding and destruction. During the week of Sept 4 and 11, PRP contractors probed the cap area to help determine if cap damage has occurred. To further investigate in detail and confirm the cap condition, Region 6 EPA requested that EPA trained Scientific divers conduct an underwater investigation to determine if high currents and flooding have damaged the integrity of the armored cap.

The current investigation, conducted by U.S. EPA Region 6 and ERT dive teams during September 11 to 15, 2017, was designed to safely conduct diver assessment of TCRA Cap integrity. The diver survey focused on the Northwest Area of the armored cap and the cap slope area, where the

underwater cap slopes at about a 1.5:1 ratio down toward the outer boundary of the cap. During the diver assessment discussions with the RPM led to implementation of a joint EPA-PRP diver surficial sediment sampling event to determine if any cap deficient location (or exposed waste materials), may contain dioxins or furans which could migrate off-site and into the environment.

ACTIVITIES

EPA Scientific divers visually and tactilely inspected areas of the TCRA Cap in order to determine if the hard armor (12 inches of gravel and rock placed over the cap) is intact on the Northwest area of the cap. During the inspection, diver observations were communicated from the diver to the surface via hardline communications and recorded in a field notebook. Divers also used a 4-foot section of rebar to estimate the thickness of the armor stone layer and other materials used to construct the cap material. Probing was also used to verify if armor stone may have been present under overlying depositional sediments. Some of these points or areas of interest were marked by GPS and used to guide subsequent diver sampling efforts.

Diving operations consisted of a single line tended SCUBA diver, using communications rope attached to the diver harness. During the diver cap survey there was direct communication between the diver and Comm box operator. Although the diver survey was in near zero visibility conditions, every few feet the diver, by using tactile sensation with hands and feeling any resistance to rod penetration, was able to determine whether any armor cap materials were present, their thickness, and whether the cover was solid or intermittent. The diver verbally described findings and descriptions to the surface. If an exposed area without any cap material was found a GPS reading was recorded over the diver's bubbles to mark the location with a numeric designation. All diver equipment and procedures followed EPA recommended techniques for contaminated water diving. See Attachment A, Diving Safety Plan for more details on diving operations, equipment, and techniques.

The Diving Safety Plan (Appendix A) is the primary document guiding EPA dive operations during the tactile/instrumental observation of the TCRA Cap. Other documents, including the REGION 6 Amended Site QAPP, the San Jacinto River Waste Pits EPA Dive Team Inspection and Sampling Plan (DTISP), and the general site Health and Safety Plan are documents which pertain to these dive operations.

Monday 9/11/17

The R6/ERT mobilized to the site and discussed the operation with the PRP contractor inside the main gate to the site. As before, the PRP contractor provided the boat and operator for the diving operations. A second contractor was present on the dive boat to note the diver survey locations and document the diver communications and cap descriptions to the surface. After reviewing the Health and Safety Plan, Dive Safety Plan, and general rules for safe boating operations the diving operations were initiated after noon on 9/11. The list of possible diver targets or AOIs were gathered from the ongoing probing operations conducted by the PRP contractor. GPS coordinates from the probing were used to drop a weighted buoy for diver descent and ascent. The AOIs surveyed by diver on 9/11 were 141, 118, 146, and 118B. At each of these locations the diver swept an area about 10 by 10 feet in size around the buoy. See Table 1 for Diver descriptions of these areas.

Tuesday 9/12/17

No diving operations were conducted. The dive team spent the day off-site filling SCUBA tanks, getting supplies and drafting a Diver Sediment Sampling Procedure.

Wednesday 9/13/17

On 9/13/17 a diver cap survey was conducted over a broader area which encompassed some of the AOIs and included some of the underwater cap slope sections in the Northwest area of the cap. As shown in Figure 1, a 100 X 100 foot box was dropped on the area as described. The dive vessel was positioned at three corners, the southwest, the northwest, and the northeast, respectively and radial diver sweep searches were conducted outward from the boat at 5 foot increments.

While diving the southwest area a surface buoy was placed at the northwest and southeast corners. The diver was deployed into the water and surveyed the area close to the vessel, then the dive tender released 5 feet of comm rope and the diver conducted a radial survey from corner to corner with a tight comm rope, until the entire southwest quadrant was surveyed at a 5 foot spacing or approximately 100 percent diver area coverage. This proceeded as diver 1 surveyed the SW and NW quadrants, followed by diver 2 surveying the NE quadrant in the same manner. Since the SE corner of the box fell on the shoreline, the SE area was not surveyed by diver, although some of the diver survey did overlap into this area. See Figure 2 and Table 1.

Thursday 9/14/17

No diver surveys were conducted. Divers went through dive logs and reviewed other documentation. Other activities were communications with EPA Region 6 and the PRP regarding the proposed Diver Sediment Sampling Procedures.

Friday 9/15/17

Based on the observations made by divers conducting sweep searches on September 13 several areas were targeted for diver sediment sampling by the U.S. EPA. Sampling was performed as per San Jacinto River Waste Pits Post-Harvey Diver Sampling Procedures which were provided to U.S. EPA by Anchor QEA (PRP Contractor) on September 14. See Attachment B.

The procedure was implemented by marking a GPS location in an EPA specified area of interest with a surface buoy. An EPA diver descended from the surface buoy and searched the nearby area for the exposed sediments (or waste materials), as observed during the assessment dives conducted on September 13. Once an area with exposed sediments was located, the buoy weight was moved to this area. In general, these areas were characterized by areas with exposed sediments and either no rock cover or intermittent rock cover. Any area with intact rock cover, even if less than the 12 inches specified was left undisturbed and not sampled.

After the buoy was repositioned within the area of interest an Anchor QEA subcontract Orion diver would go to the buoy and collect a sediment sample. After the Orion diver returned to their vessel, an EPA diver would return to the point and collect a second sample. These samples were described as on-the-cap samples and represented areas where the cap did not appear to be intact and sediments (or waste materials) were exposed to the surface water. GPS coordinates were also collected at all buoys after sample collection was completed.

Nearby each of these locations a second sample, normally down-slope of the first sample, was collected in depositional areas that were below the base of the slope. These locations were typically characterized by a few inches to greater than a 4-foot layer of soft depositional sediments that were overlying a harder material that was interpreted to be the armor cap. These samples were not considered to be potentially paper waste material, but rather waste material or river sediments that have settled on top of cap. Sample locations and descriptions of these locations are summarized in Table 2. A total of 7 on-the-cap locations and 7 below base of slope sample locations were collected for a total of 14 field samples. Figure 3 contains the sediment sample locations.

As per the sampling procedure provided by Anchor QEA, all sediment samples were collected directly into an 8-ounce jar by scoping the jar into the upper 3-inches of the sediments. The jars were capped on the bottom of the river immediately after collection and brought to the surface for processing. All samples collected by Anchor QEA (Orion) and EPA divers were immediately handed to Anchor QEA on the Orion dive boat for sample processing and analysis. Divers gloves were decontaminated with water between each sample location.

SUMMARY OF ACTIVITIES

On 9/15 the EPA diver cap survey and sampling activities were completed. All EPA dives were logged and a summary of the dives is contained in Table 3. US EPA Scientific divers conducted a total of 18 SCUBA dives at depths up to 16 feet. Several equipment issues were encountered, such as replacement of a dry suit wrist seal and hood. Several dry gloves were replaced during dives, due to leakage or cuts caused by oyster shells. No injuries occurred to divers or topside support personnel.